

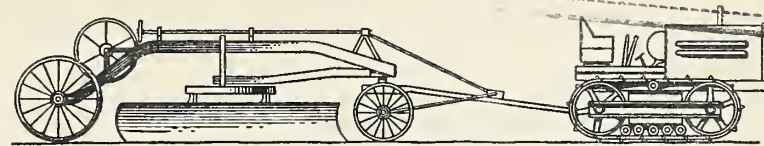
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1.9
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CONSTRUCTION



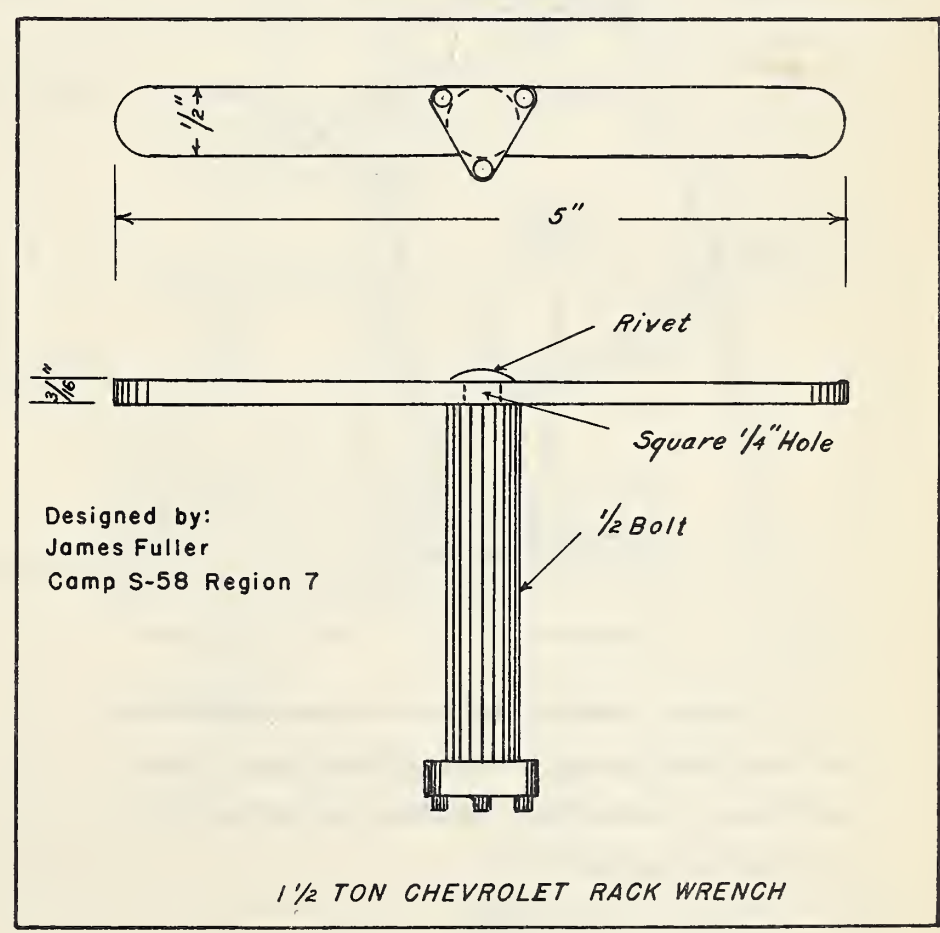
HINTS

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE
WASHINGTON, D. C.

Vol. 3.

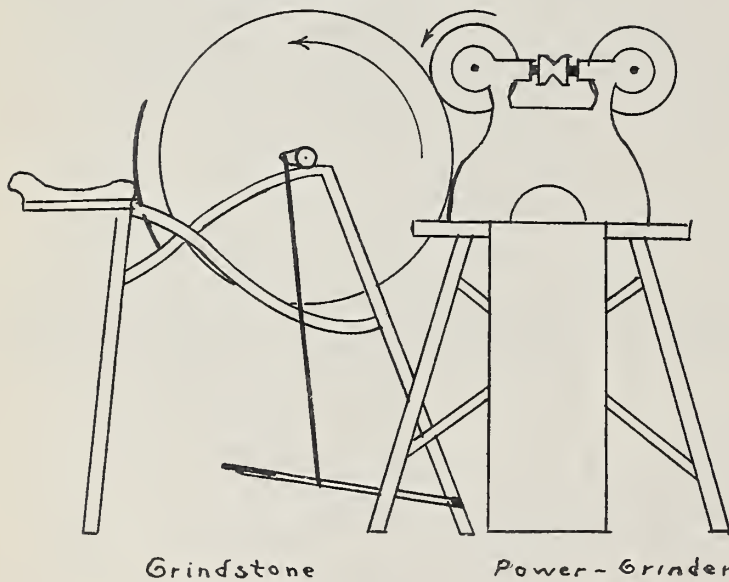
August 28, 1937.

No. 12.



DRESSING A GRINDSTONE

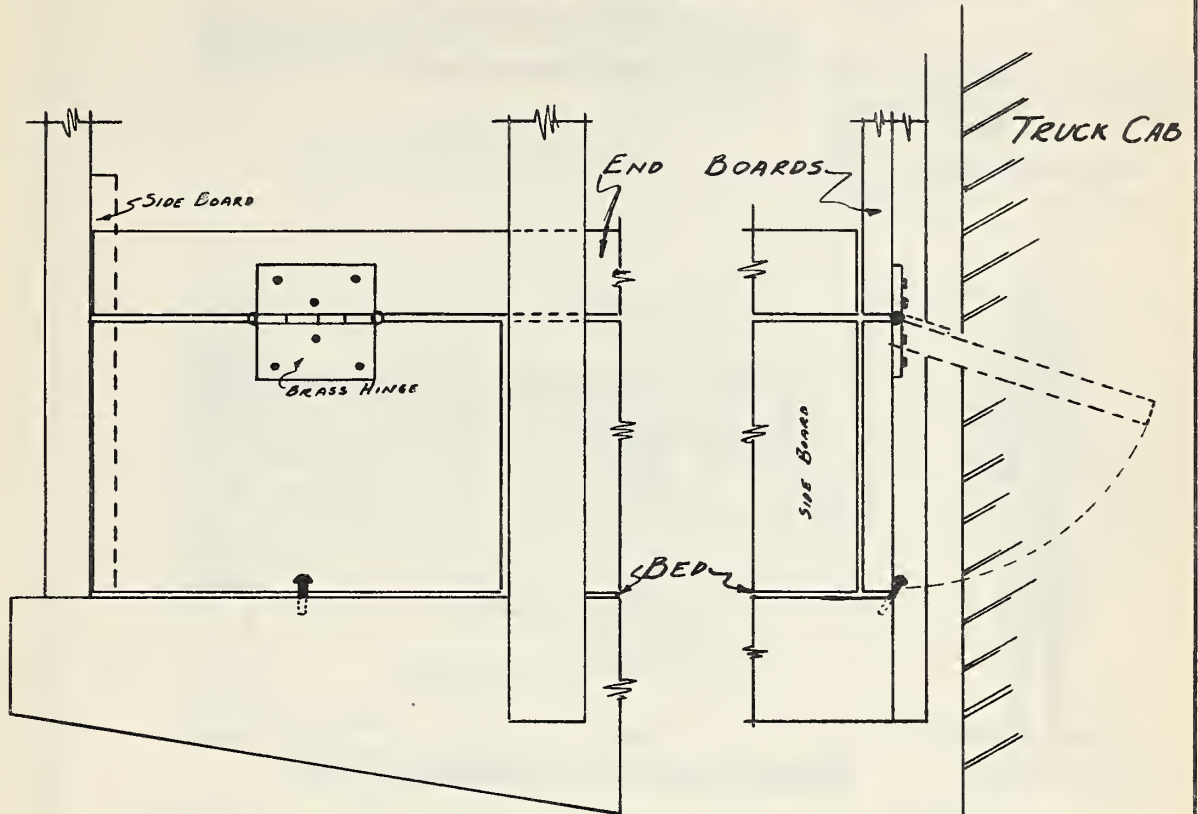
T. M. Holt
Superintendent, F-22
R-9



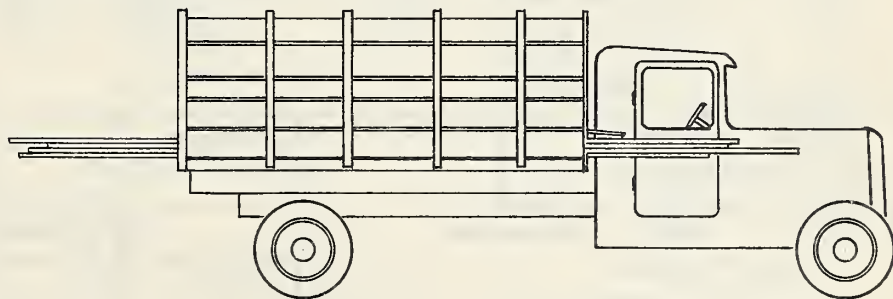
Using a power-grinder to dress down a grindstone has been found to be an easy and efficient way to eliminate bumps in grindstones resulting from soft spots in the stone and excessive use.

CONSTRUCTION HINTS

HEAD-GATE OPENING

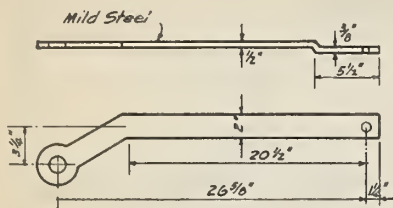


FRONT SIDE
DIMENSIONS WILL VARY ACCORDING TO TYPE OF TRUCK

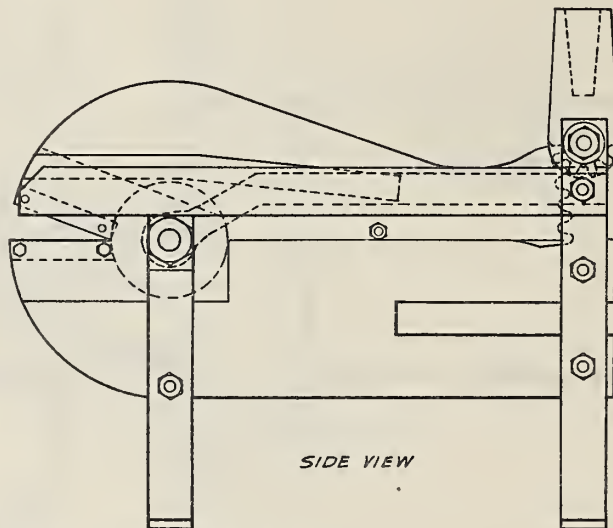
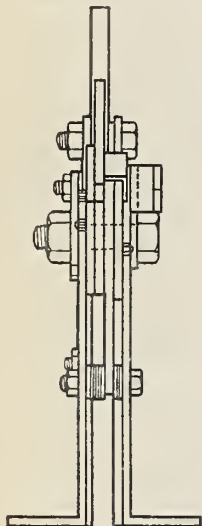
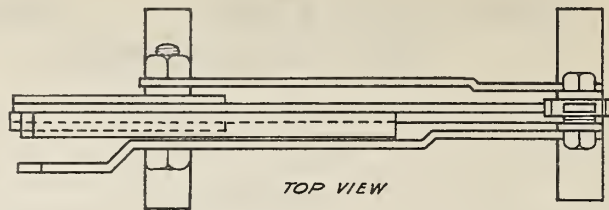


TO ALLOW FOR CARRYING OF LONG PIPES, POLES, ETC.

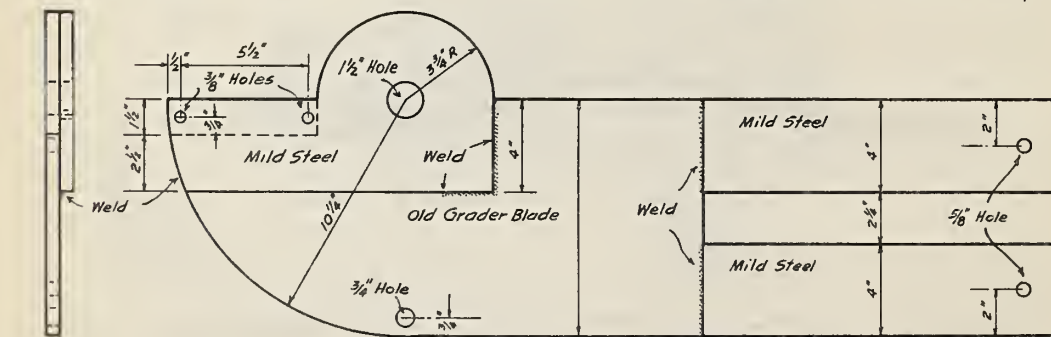
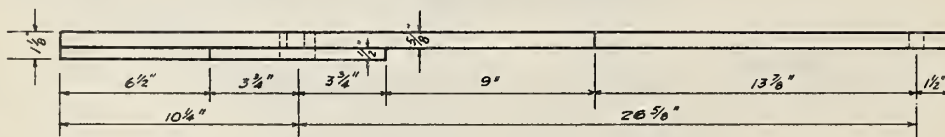
SUBMITTED BY - E. C. SHEA
DRAWN BY - R. M. W.
DATE - 3-15-37
R-5



RIGHT TIE PLATE DETAIL
One required - 1 1/2" = 12" Scale



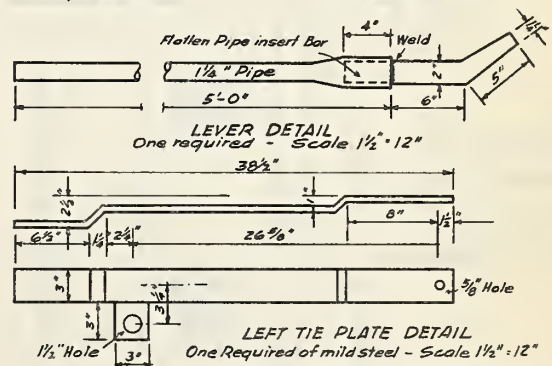
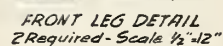
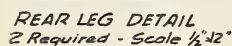
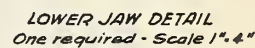
ASSEMBLED VIEWS OF IRON CUTTERS



END VIEW

LOWER JAW DETAIL
One required - Scale 1" = 4"

CHEQUAMEGON NATIONAL FOREST
MONDEAUX DISTRICT
IRON CUTTER
DESIGNED AND MADE BY C. ZABROWSKI
District Blacksmith - Camp Per Kinston F-16

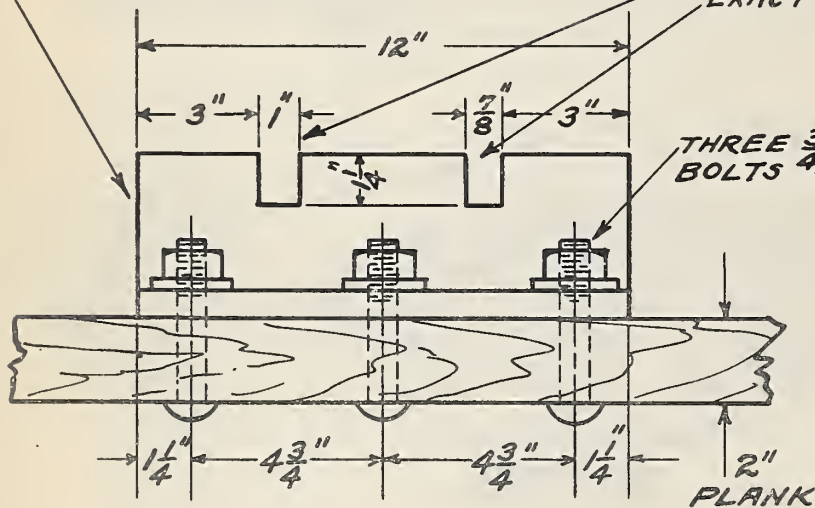


CHEQUAMEGON NATIONAL FOREST
Mondeoux District
IRON CUTTERS
Designed and made by C. Zabrowsky
District Blacksmith-Camp Kinston F-16

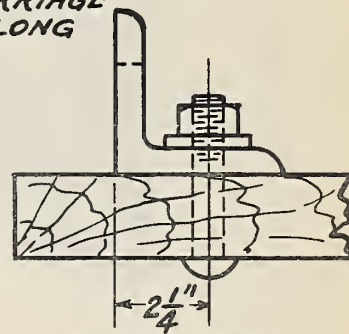
HEAVY ANGLE IRON, 4"X4"X $\frac{5}{8}$ "
IS SUGGESTED, BOLTED
TO 2" PLANK ABOUT 6 FT. LONG.

SLOTS CUT IN ANGLE IRON
EXACT SIZE OF DRILL STEEL

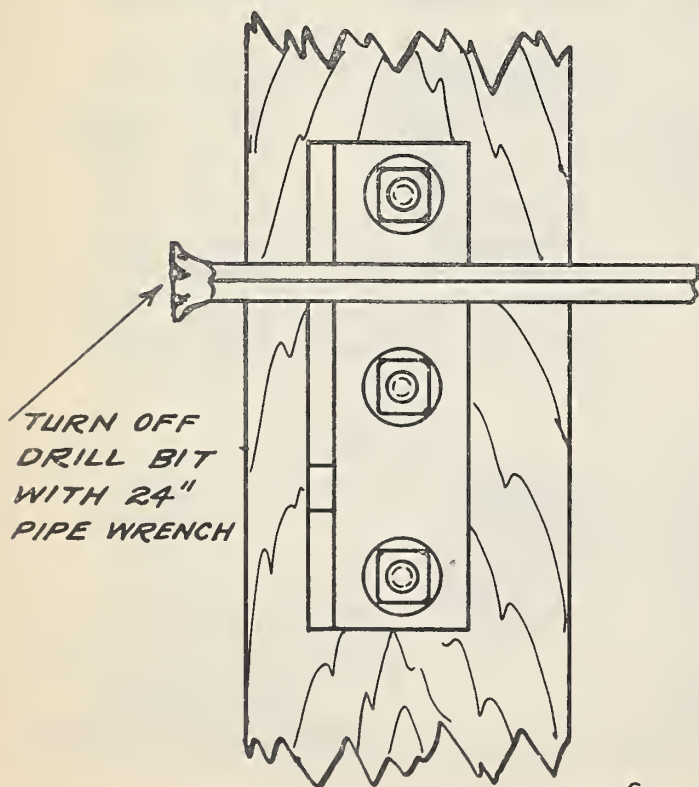
THREE $\frac{3}{4}$ " CARRIAGE
BOLTS 4-4" LONG



FRONT VIEW



END VIEW



TURN OFF
DRILL BIT
WITH 24"
PIPE WRENCH



DRILL HOLDER
SCALE 3"=1 FT.

DRILL HOLDER - FOR REMOVING
DETACHABLE BITS

This device, illustrated on page 6 , was designed to facilitate the removal of detachable drill bits and by using an old 24" Stillson wrench the bits can be removed without the danger of particles of steel flying as is the usual case if a hammer is used to loosen the bit.

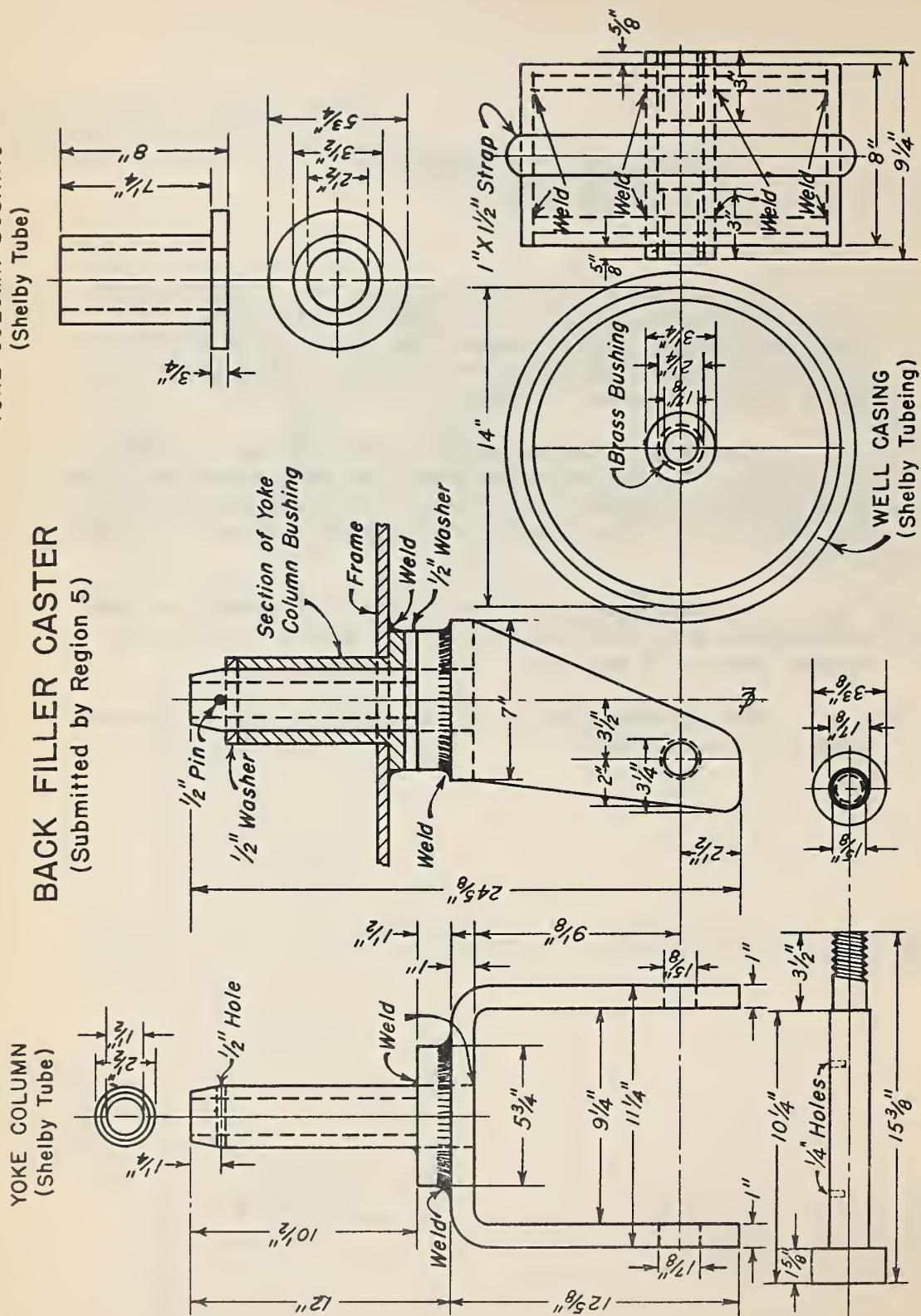
This type of device has been put into use in every camp on this forest and since they have been installed there have been no injuries from flying steel occasioned by removing drill bits with a hammer, which previously was the usual method.

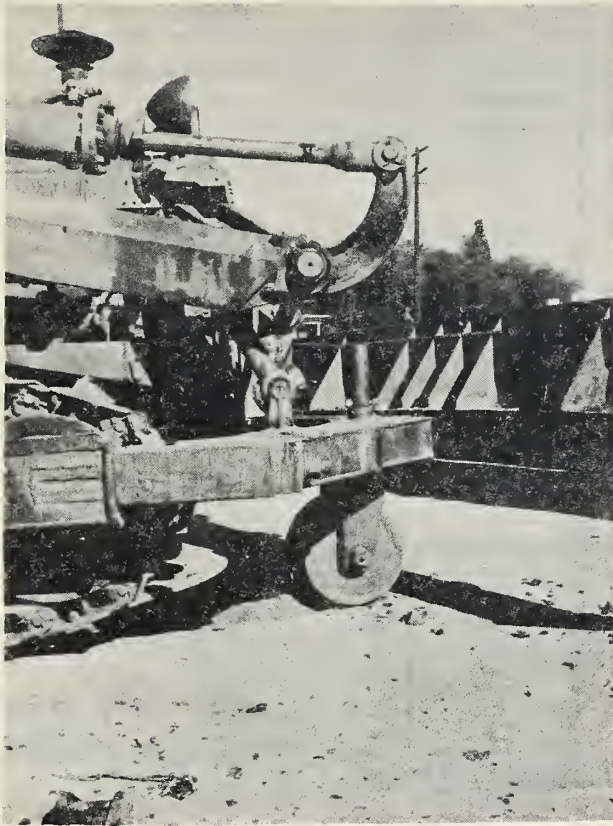
It is suggested that an old Stillson wrench be used as the bits will ruin the jaws of the wrench but will not injure the bit in any way.

This was developed by E. M. Simpson, Junior Foreman, Camp N. F. 4, Vermont.

BACK FILLER CASTER
(Submitted by Region 5)

(Submitted by Region 5)

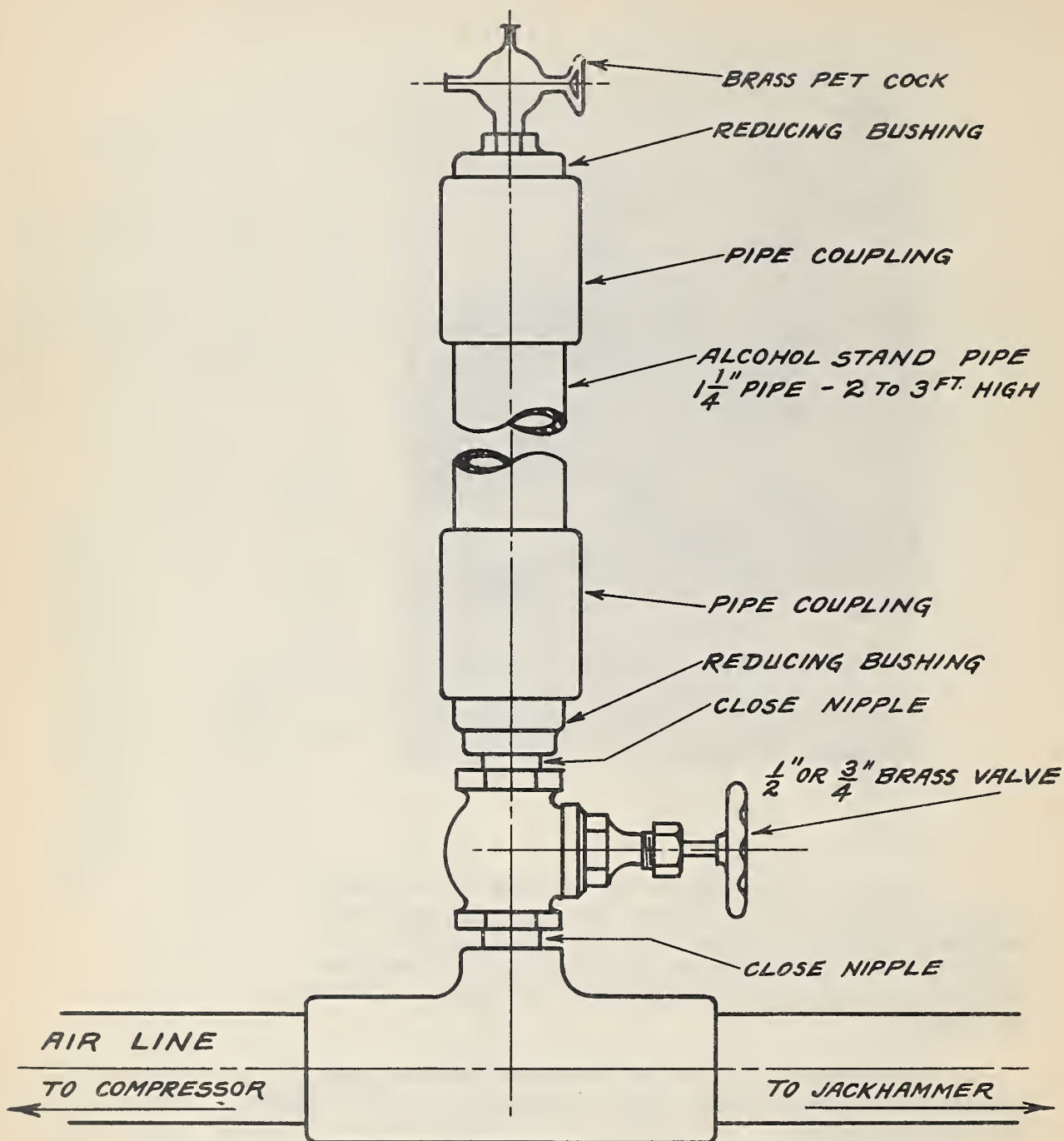




Above is a photograph of the caster which has been developed in Region 5 for use on Woolridge Trailbuilders, for doing truck trail maintenance work. It eliminates the necessity of removing the trailbuilder blade when traveling long distances and saves considerable time.

Experimentation is now under way to find ways of adapting this caster wheel on the Isaacson and other types of trailbuilders.

A working diagram is shown on the opposite page.



ALCOHOL DRIP
SCALE 6" = 1 FT.

ALCOHOL DRIP - TO BE USED ON AIR COMPRESSOR AND AIR LINE

The sketch shown on page 10 , shows an installation recommended for use on air compressors and compressed air lines to prevent the air lines and jack hammers from freezing. It is recommended that when installing this attachment that it be placed in the air line as near as possible to the compressor.

To operate the following procedure should be followed:

1. Close brass valve at bottom of stand-pipe.
2. Open air cock and release pressure.
3. Remove top reducer bushing and pour in about $\frac{1}{2}$ pint alcohol if used to thaw out frozen jack hammer, or fill to the top if used to prevent air line from freezing.
4. Replace and tighten bushing.
5. Close air cock.
6. Open brass valve only slightly and allow alcohol to seep into line if used to prevent freezing, but if used to thaw out frozen line or jack hammer open valve wide and let $\frac{1}{2}$ pint of alcohol into line.

Caution:

Always open air cock to release the pressure before unscrewing the bushing so as to prevent alcohol being blown out if bottom valve is not properly closed.

This installation has been made on one of our compressors and has been operated with a marked degree of success during sub-zero weather.

Developed by E. M. Simpson,
Junior Foreman, Camp N. F. 4,
Vermont, R.7.

REO DIFFERENTIAL HOUSINGS AND STUDS

Practically all users of Model 2B4 Reos have had a considerable amount of trouble with the breaking of differential housings and studs. On the Green Mountain the following remedy has completely eliminated all troubles along these lines.

Remove differential assembly, wash thoroughly, re-assemble and draw all cap screws holding two halves as tightly as possible. Using a mild steel electrode, make a surface weld completely around the differential case. Care should be taken to see that the weld is centered over the connection of the male and female halves of the assembly. The weld does not affect the runout of the ring gear more than 0.002".

Four rear ends were treated in this manner three months ago and subjected to thorough tests. Inasmuch as all trouble was eliminated by this welding operation, the remaining Reos have been treated in the same manner.

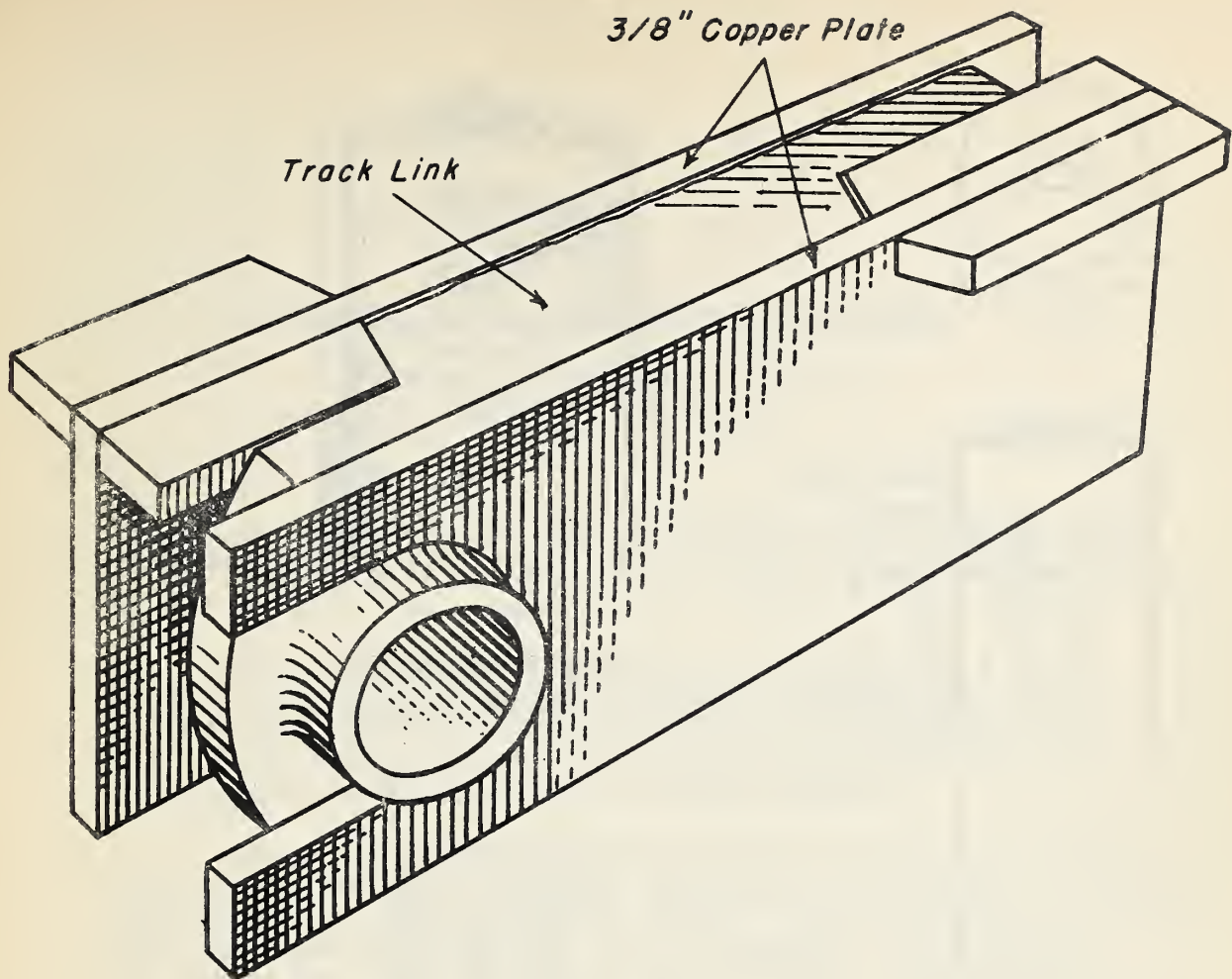
It might be well to state here that this Forest has already had experience with one of the new type rear ends furnished by the Reo Company in an effort to eliminate this trouble, and that the same breakage occurred as with the original type. It has been found necessary to weld this new rear end as the others had been treated.

This feature was originated and developed by Ronald E. Griffith, Supervising Mechanic, and Lawrence E. Tiernan, Shop Foreman, on the Green Mountain Forest.

CAB FOR TRACTOR SNOWPLOWS

The problem of providing cabs for Caterpillar "50" Tractors used on winter snowplow operations has been economically solved by placing a cab from a condemned 1933 Chevrolet dump truck on each tractor being so used. The cabs can be easily attached by the blacksmith or enrollee mechanics and will provide ample protection from the cold and snow. Hot water heaters can be installed to provide warmth.

This idea may not be original on the Green Mountain Forest, but it was developed here by the Superintendent and Enrollee Mechanics at the West River Camp.



Submitted by Henry M. Myrin, Jr., ECW Warehouse, Antigo, Wisc.

In rebuilding track links for any make of tractor the following method has proven very effective.

The first requisite is two plates of copper $\frac{3}{8}$ inch thick and of the desired width and length so as to be of the same size as a new link. Stand the link on edge and place one copper plate against each side. Cut out a recess in one plate which will receive the projection of the track-pin hole, thus enabling the copper to fit snugly against the link. Lugs of copper are cut from a $\frac{3}{8}$ inch plate to fit the spaces created by the shape of the link where it hinges to another link. Braze the lugs to the plates one on each side as is shown in the drawing. This is done so that the plates may be reversed and used for either left or right hand links. Place both copper plates against the link and build up the link by welding with Manganese rod. Lay enough rod so that with the finishing layer of self-hardening rod the link will again be flush with the tops of the copper plates. The finished product needs no grinding. Copper plates must be used in this method because copper will not fuse with the rod or link.

Further details or explanation will be furnished upon request.

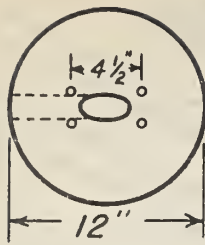


FIG. 1

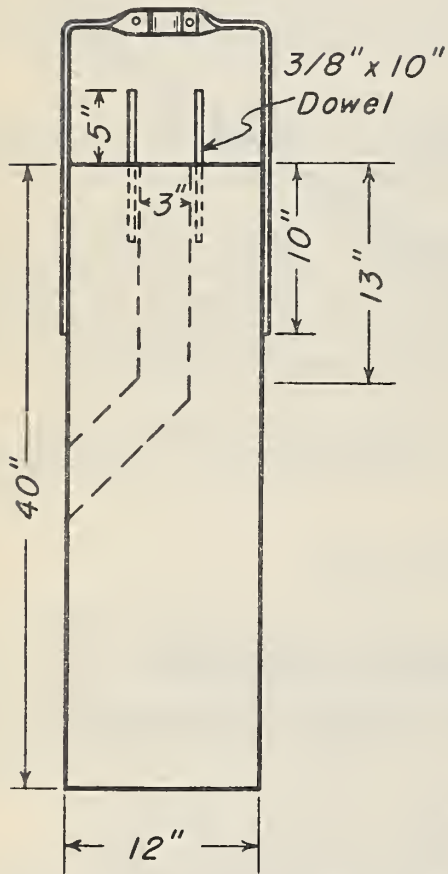


FIG. 2

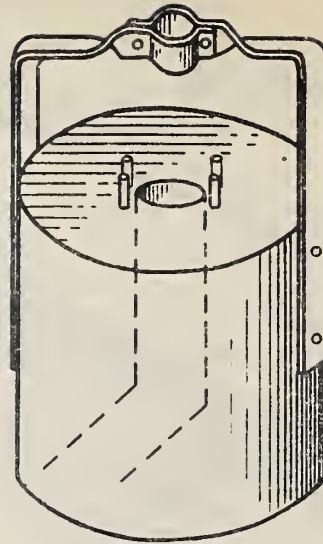
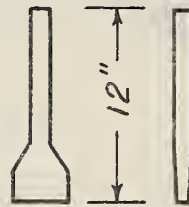


FIG. 3 - DETAIL
(Not to Scale)



Drift Pin

AXE HANDLE EXTRACTOR WITH DRIFT PIN HOLDER

AXE HANDLE EXTRACTOR - WITH DRIFT PIN HOLDER

Submitted by Camp Harrietta, F-15
Harrietta, Michigan.

This article deals with an improvement of the axe handle extractor which is illustrated in the Construction Hints for April 17, 1937.

The chief improvement consists of a holder for a drift pin which is used in extracting the handle from the axe, preventing accidents sometimes caused by holding the drift pin in the hand. It is also possible for use to stand farther from the drift pin, providing safety from bits of flying steel.

The cylindrical block that is used is 40" long and 12" in diameter. It has an elliptically shaped hole drilled in the top center, which has diameters of 3" and 1". (Fig. 1). This is 13" deep and is met by a slanting hole (45 degrees) which intersects the side of the block of wood 19" below the top. This slanting hole provides for the exit of the handle after it has been knocked out of the head.

Four dowel pins, $3/8"$ x 10" are set into the top of the block around the hole described above, in a rectangular pattern, $4\frac{1}{2}"$ x 1". These pins hold the axe in place when it is set on the block. (See Fig. 1).

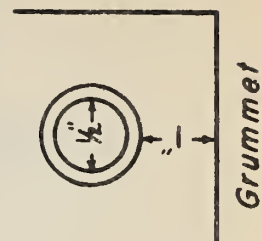
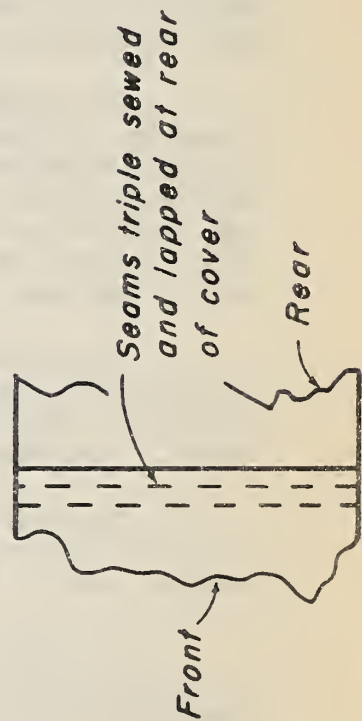
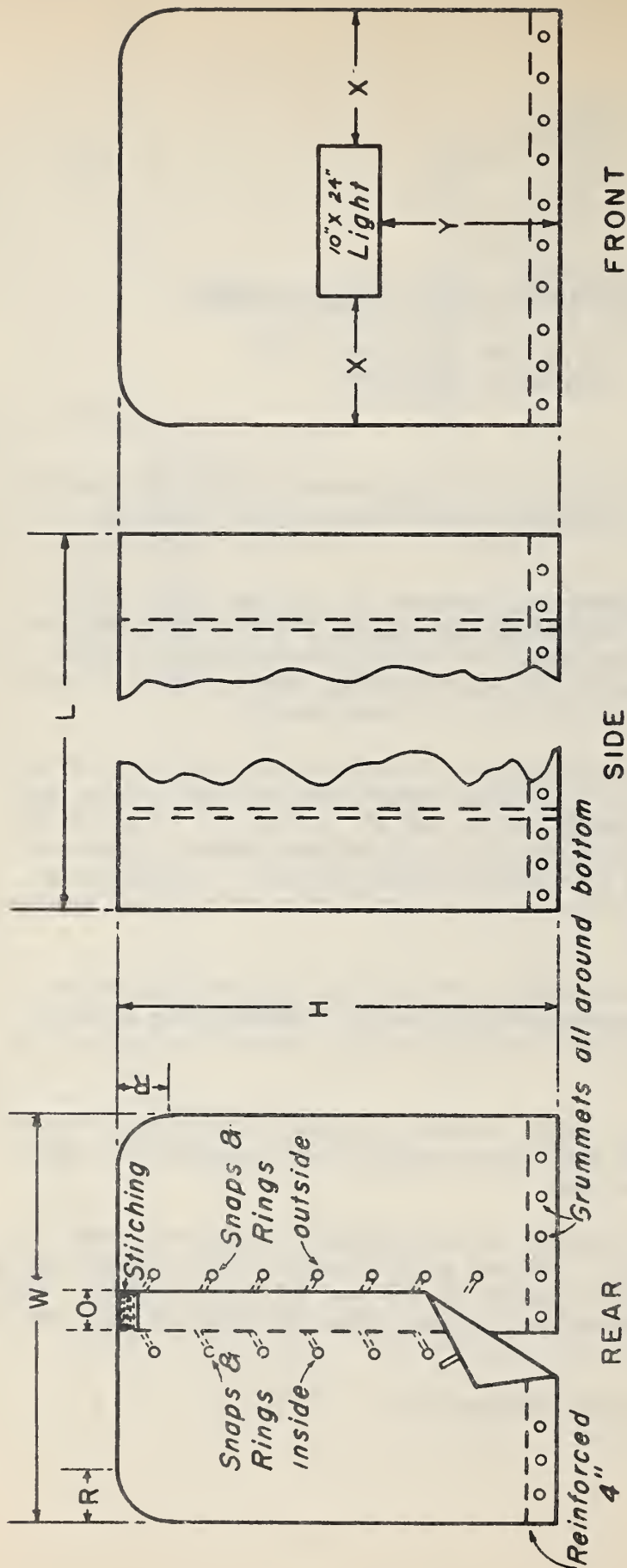
The drift pin, which is used, is constructed from 1" round iron, is 12" long and has one end shaped to fit against the axe handle, inside of the head.

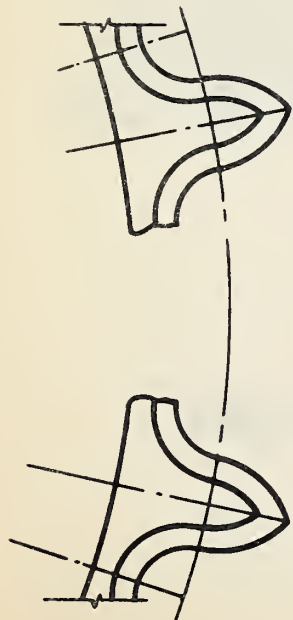
The drift pin holder is constructed of bar iron $3/8"$ x 2" x 26" in length (18" on side). It has a right angle bend, followed by a 90 degree twist and then is shaped to fit the drift pin handle. The holder consists of two pieces bolted on each side of the block as shown in Fig. 3.

A sketch is shown on page 14 .

CANVAS TRUCK COVERS

ALASKA REGION - C.H. FOREWARD



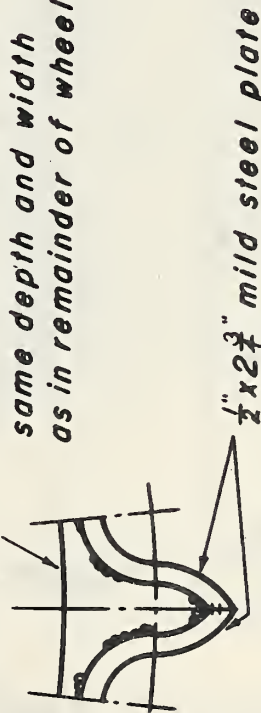


SECTION OF SPROCKET
WITH TOOTH BROKEN OUT



SAME SECTION
WITH FABRICATED TOOTH WELDED IN

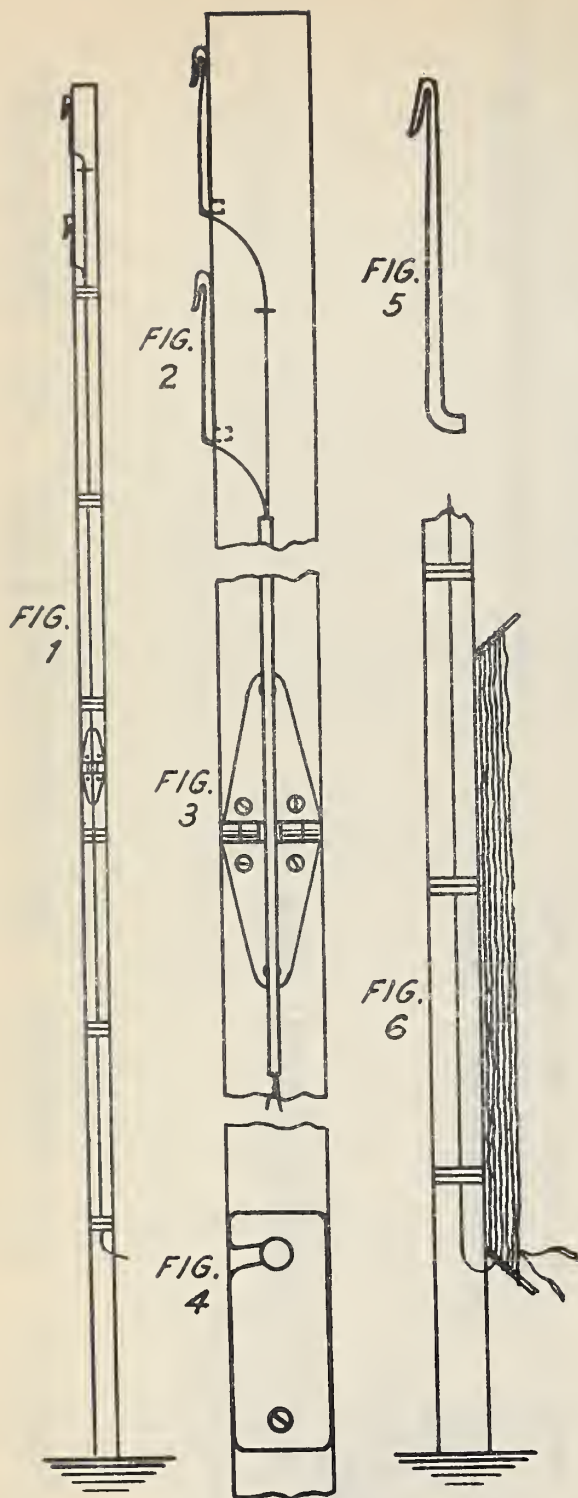
*Weld web plate to tooth. Make web
same depth and width
as in remainder of wheel.*



BUILT-UP TOOTH

*Use G.E. type F welding rod or equal.
Cost is much less than for new sprocket.*

REPLACEMENT OF TOOTH IN CATERPILLAR 40 SPROCKET



LIST OF MATERIALS

2 pcs. 6' x 1" x 1" Any light wood
 1 - 1" strap hinge with screws
 2 - 10" pcs. $\frac{1}{4}$ " copper rod
 12 or 15 small staples
 1 roll electricians tape
 40 ft. emergency telephone wire
 1 pc. strap iron 1" x 6" x $\frac{1}{16}$ "

Fig. 1 - Completed pole

Fig. 2 - Detail of copper hooks on pole

Fig. 3 - Detail of hinged joint with wire taped and stapled down.

Fig. 4 - Detail of hook made of 6" strap.

Fig. 5 - Detail of copper hook connector.

Fig. 6 - Detail of 40 ft. of wire put up when not in use. Wire running down pole taped and stapled in place.

SKETCH OF EMERGENCY TELEPHONE HOOKUP POLE

I. S. DOUGHERTY, HOOSIER P. U.

EMERGENCY TELEPHONE HOOKUP POLE

submitted by

I. S. Dougherty, Hoosier Purchase Unit

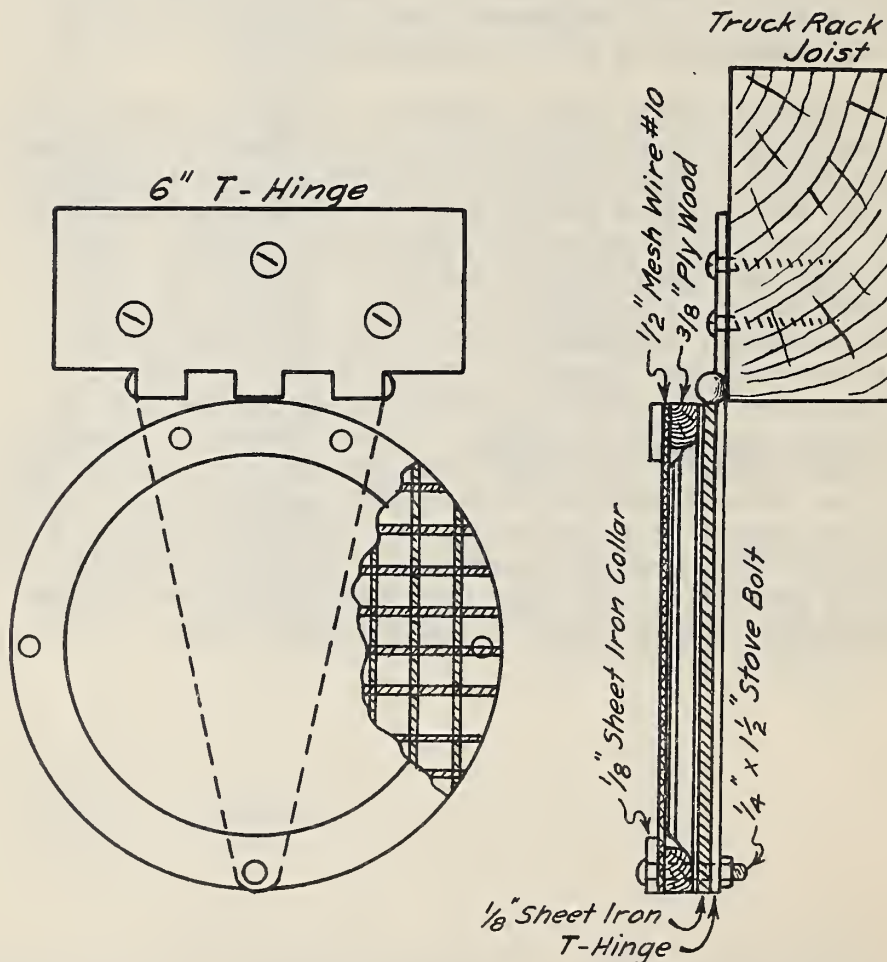
Explanation of Construction

This pole, illustrated on Page 18, was designed for compactness and can be carried in a Pickup. Its primary use is a handy, workable hookup to enable foremen or fire crews to hook on the telephone line at any point and establish communication with headquarters.

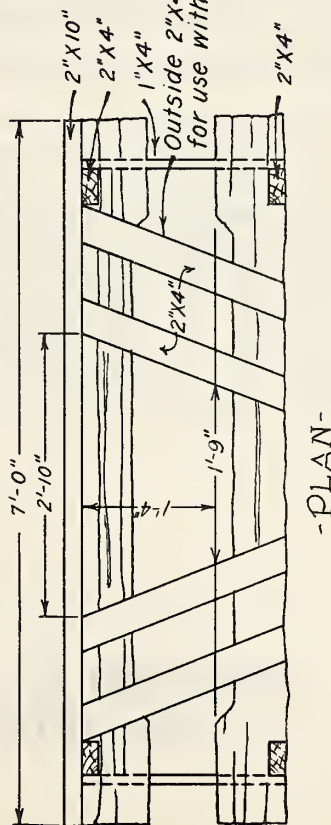
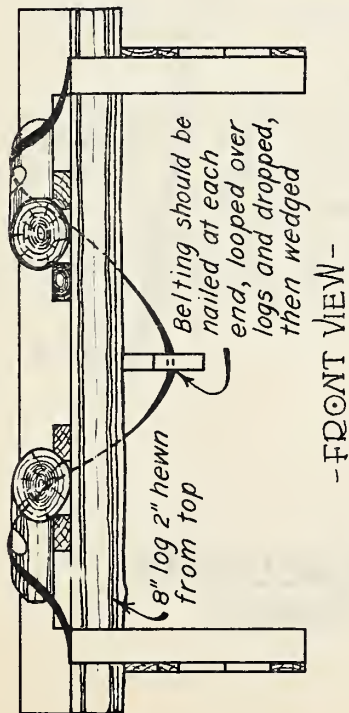
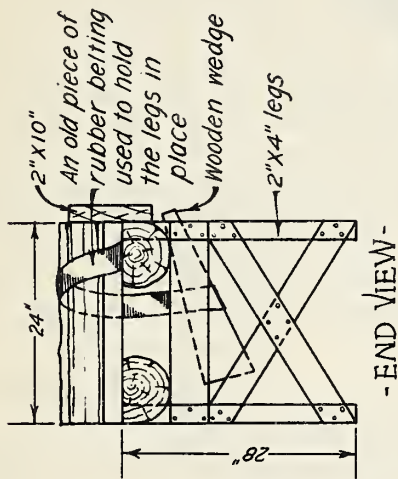
Flatten about three inches of the end of the copper rods and bend a right angle turn in the other end as shown in the sketch. Make the bend in the hook close enough so that the wire will be wedged tightly to make good connection. Place the hooks on the rods about 14 inches apart, drill hole in pole to insert bent end. This keeps rod from turning or slipping out of place. Solder the ends of the emergency telephone wire to the copper hooks at lower ends and tape tightly. Staple hooks in place with small staples, run the wire down the side of the pole on the inside when pole is folded. Tape the wire in place and staple down through the taps. Cut off the heads of two small nails and drive inside of pole to hold surplus wire. Solder the short places of solid copper wire to the lower end of the emergency wire to use for terminals. The wire should be fastened to pole after the hinge and strap hooks are in place. Sketches show how to attach hinge and strap hook.

Submitted by Howard Cook, District Ranger, Cadillac District,
Manistee Purchase Unit.

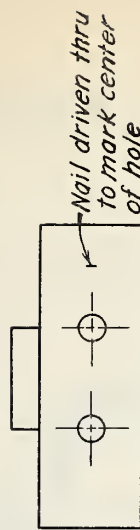
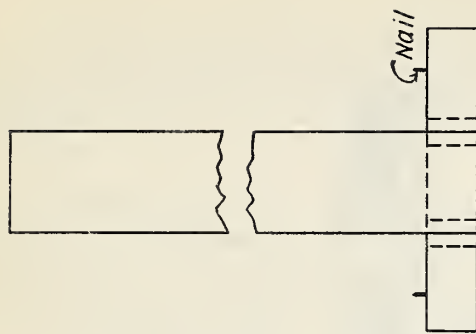
Considerable trouble has been experienced in protecting safety reflectors on Forest Service trucks from breakage, from stones thrown up by the truck tires and from brush on narrow trails. This can be largely overcome by reinforcing the back of the reflector and protecting the glass with one-half inch mesh and number ten wire screen, and attaching the reflector to the truck rack joist with a six-inch T-hinge, as shown in the sketch.



SAFETY REFLECTOR
HANGER AND PROTECTOR



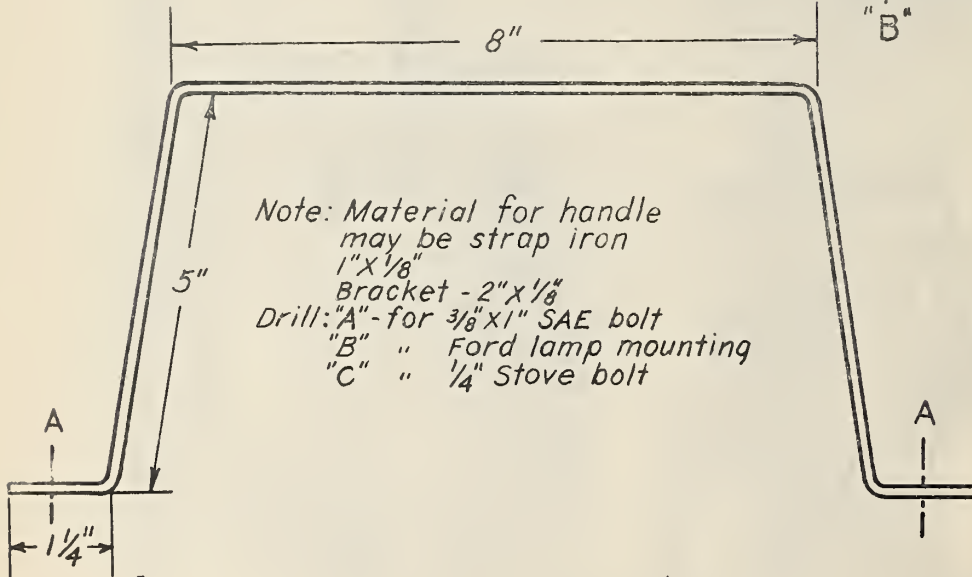
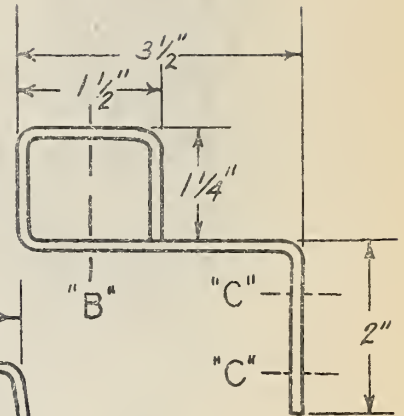
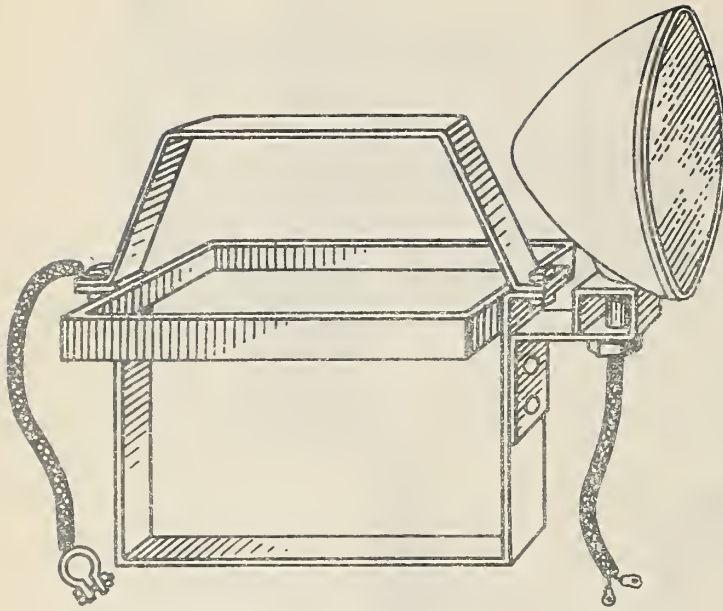
WORK BENCH for CONSTRUCTION OF TABLE ENDS



METHOD OF USE

Place flat on table top with edge against edge of table top. Mark center of hole with nail. Then pull back and clamp along line on which the hole is to be drilled. Insert bit in hole and place point of bit in hole punched with the nail.

- ONE METHOD OF DRILLING A
- STRAIGHT HOLE IN TABLE TOPS



PORTABLE HEADLIGHT 32 CANDLE POWER

PORTABLE FLOODLIGHT

A very serviceable light may be constructed from bits of odds and ends as was this one, and will be found invaluable during Forest Fire Season, when loading and unloading fighting crews.

A bracket of 2" x 1/8" strap iron was bent to the shape shown and drilled at "B" to take a standard Ford Headlight mounting. Holes were then drilled at "C" for mounting to a battery frame (Old Model "T") 1/4" stove bolts being used to do the mounting. A handle fashioned from 1" x 1/8" strap iron, as shown, was then bolted to the battery frame, after drilling "A" to take 3/8" x 1" SAE Bolts. In bolting the handle a ground wire was inserted at the end opposite to the bracket, and connected to one terminal of the storage battery. The cable through the lamp mounting, having two wires, was used as a single connector by splicing or clamping, both filaments lead together before closing the circuit to the other pole of the battery. Headlight bulbs, of the double filament type thereby deliver the combined candle power of both filaments and thus is delivered 32 or 42 candle power depending upon the rating of the bulb used.

In the event that a storage battery cannot be spared as permanent supply for this lamp, a quick means of connection permitting ease of battery removal is found by using flat washers at the battery poles.

When these are connected to the terminal wires they may be quickly slipped on or off the battery poles.

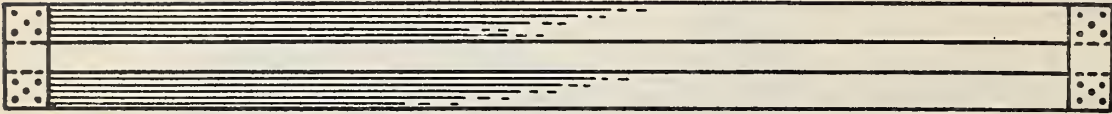
A permanent hook-up might suggest the use of a snap switch mounted to the lamp shell or some other place where the ingenuity of the builder may prefer.

To adjust the battery frame to the size battery used it was found necessary to insert pieces of 1/2" wall board around the sides and under the storage battery.

1" x 4" White Pine boards

Space between boards $\frac{1}{2}$ " larger than size of bit used.

Length of boards from 8' to 12', depending on size of stone being worked.

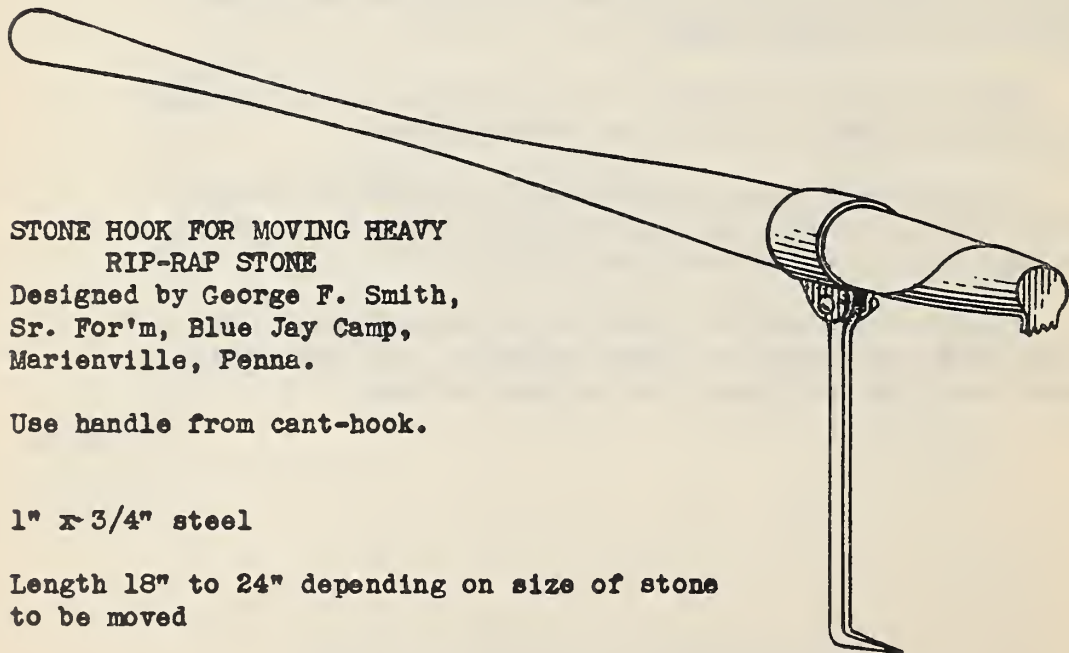


DRILLING GUIDE FOR STONE CUTTING

Designed by George F. Smith, Senior Foreman, Blue Jay Camp,
Marienville, Pa.

Keeps holes lined up, making it easier to get a straight face when splitting.

Drill one hole at each end of guide and insert iron pin to keep guide in place.



STONE HOOK FOR MOVING HEAVY RIP-RAP STONE

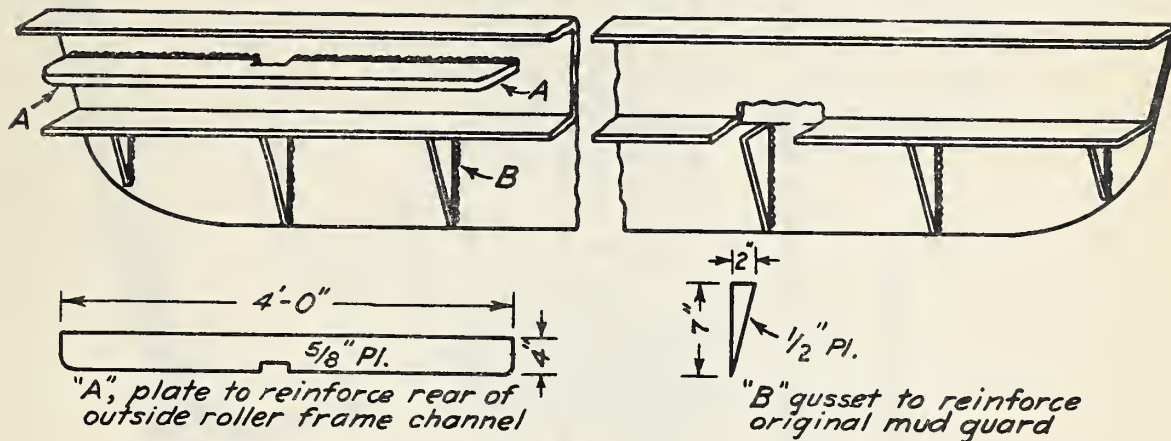
Designed by George F. Smith,
Sr. For'm, Blue Jay Camp,
Marienville, Penna.

Use handle from cant-hook.

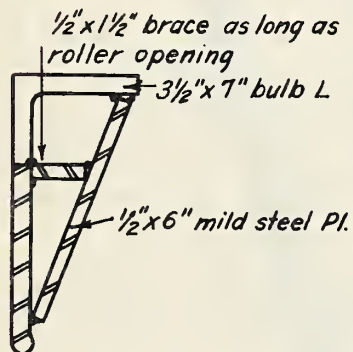
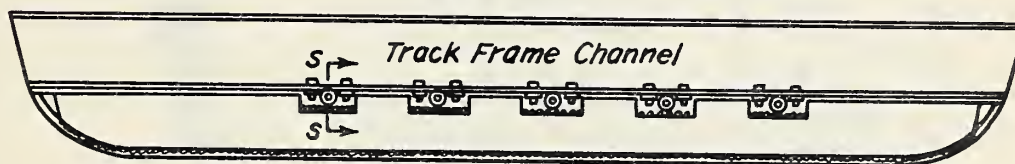
1" x 3/4" steel

Length 18" to 24" depending on size of stone
to be moved

METHOD 1



METHOD 2



Section "S-S" thru cutout space beneath roller

Cut out web at ends to provide for bending up bulb and welding to allow easy travel

Drill holes slightly oversize to compensate for distortion incurred in welding

TWO DIFFERENT METHODS FOR CONSTRUCTING IMPROVED TRACK ROLLER GUARDS FOR CRAWLER TYPE TRACTORS

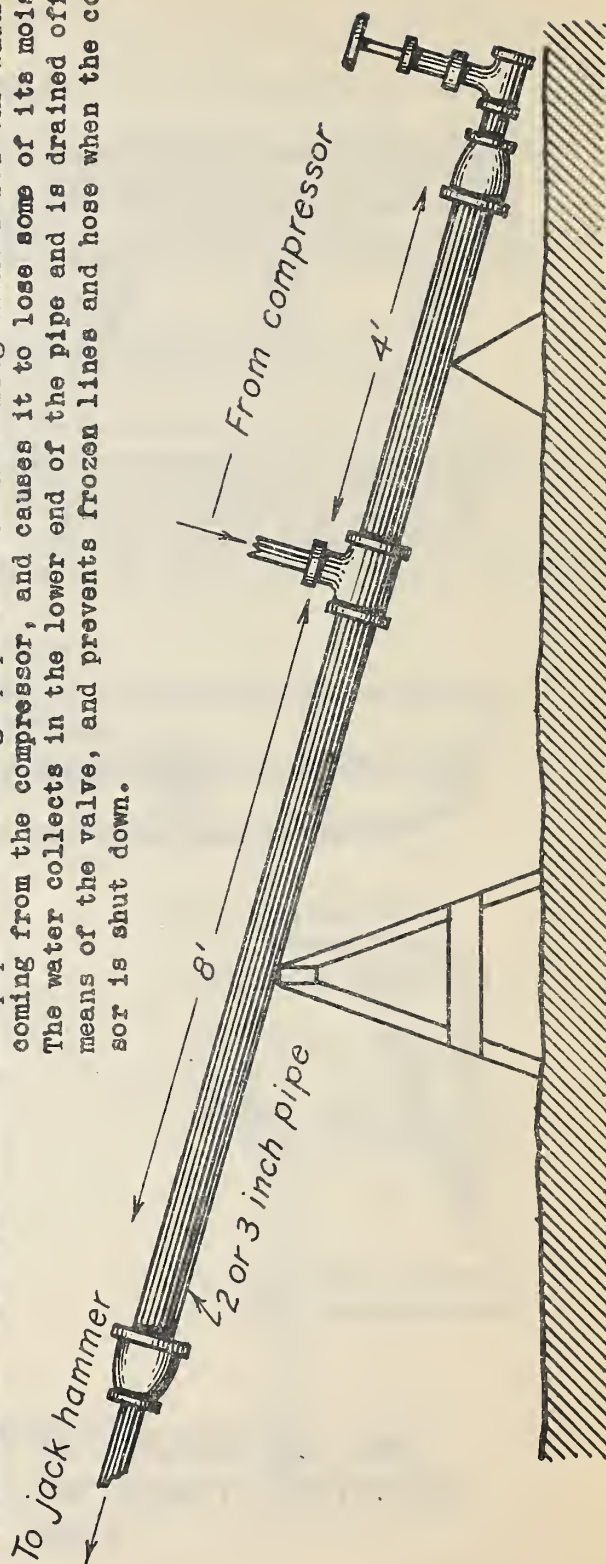
JACK HAMMER COOLER

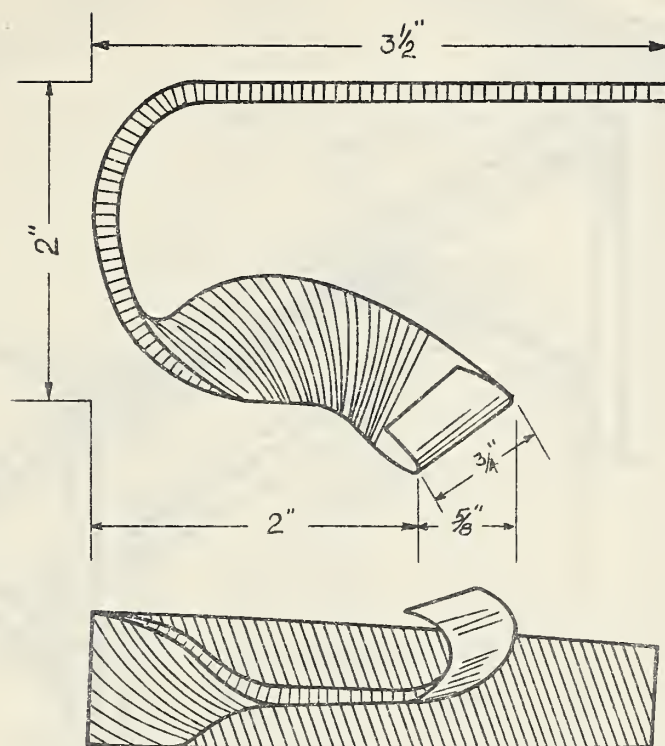
Submitted by

W. H. Drath, Project Superintendent, Blue Jay Camp,
Allegheny National Forest

When drilling rock in cold weather, the following devices will prevent many delays and help get maximum production.

1. Connect a twelve-foot length of two or three-inch pipe in the airline close to the compressor and place it so one end is about four feet higher than the other. The supply line from the compressor should be connected to a T about four feet from the lower end of this pipe, and the line leading to the hammer should be connected to the upper end. A reducer with a three-quarter inch valve is attached to the lower end of the pipe. This large pipe acts as a cooling chamber for the warm air coming from the compressor, and causes it to lose some of its moisture. The water collects in the lower end of the pipe and is drained off by means of the valve, and prevents frozen lines and hose when the compressor is shut down.





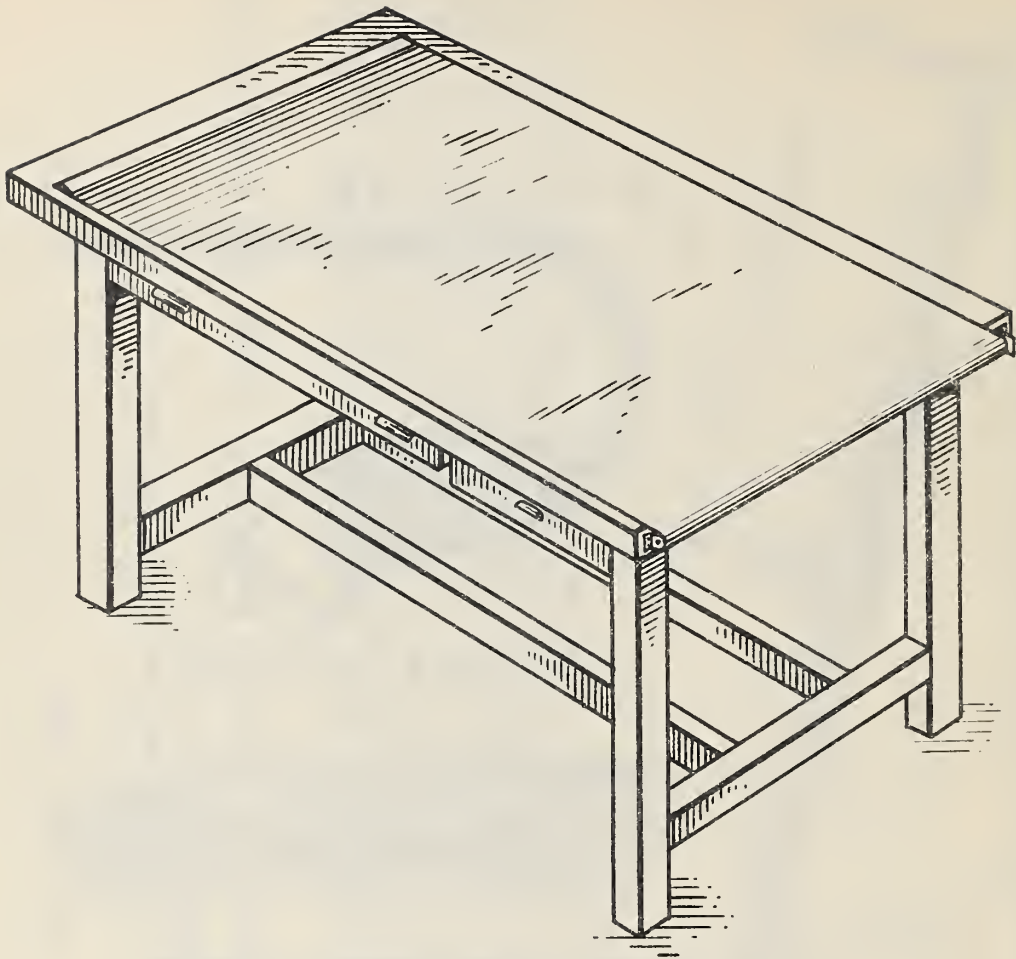
Submitted by Fred Zimmerman, Blacksmith,
Camp Newaygo F-24, Manistee Purchase Unit

Patterned on the idea of the Syracuse Tree Marker, this marking tool was made from an old file at Camp Newaygo.

This tool was made for use on a project where aspen logs were being cut. It obviates the necessity of carrying an axe for blazing and is far better than a timber scribe in that it cuts a wider strip and guards the knuckles from skinning. The "U" shape makes for a better grip and allows more application of pressure.

The handle point was cut off an 8" saw file and a 1" cutting edge was ground on one side. Next, the cutting part was bent around a 3/4" pipe, making the blade "U" shaped. Allowing for a 4" handle, the file was bent around a 1-1/4" pipe. Finally, the file was placed in a vise and twisted until the cutting blade came into its proper position. A few turns of adhesive tape gives the tool the refinement of a handle.

TIMBER MARKER



Sketch showing ordinary window shade used on Drafting Board or table to protect work from dirt and dust.

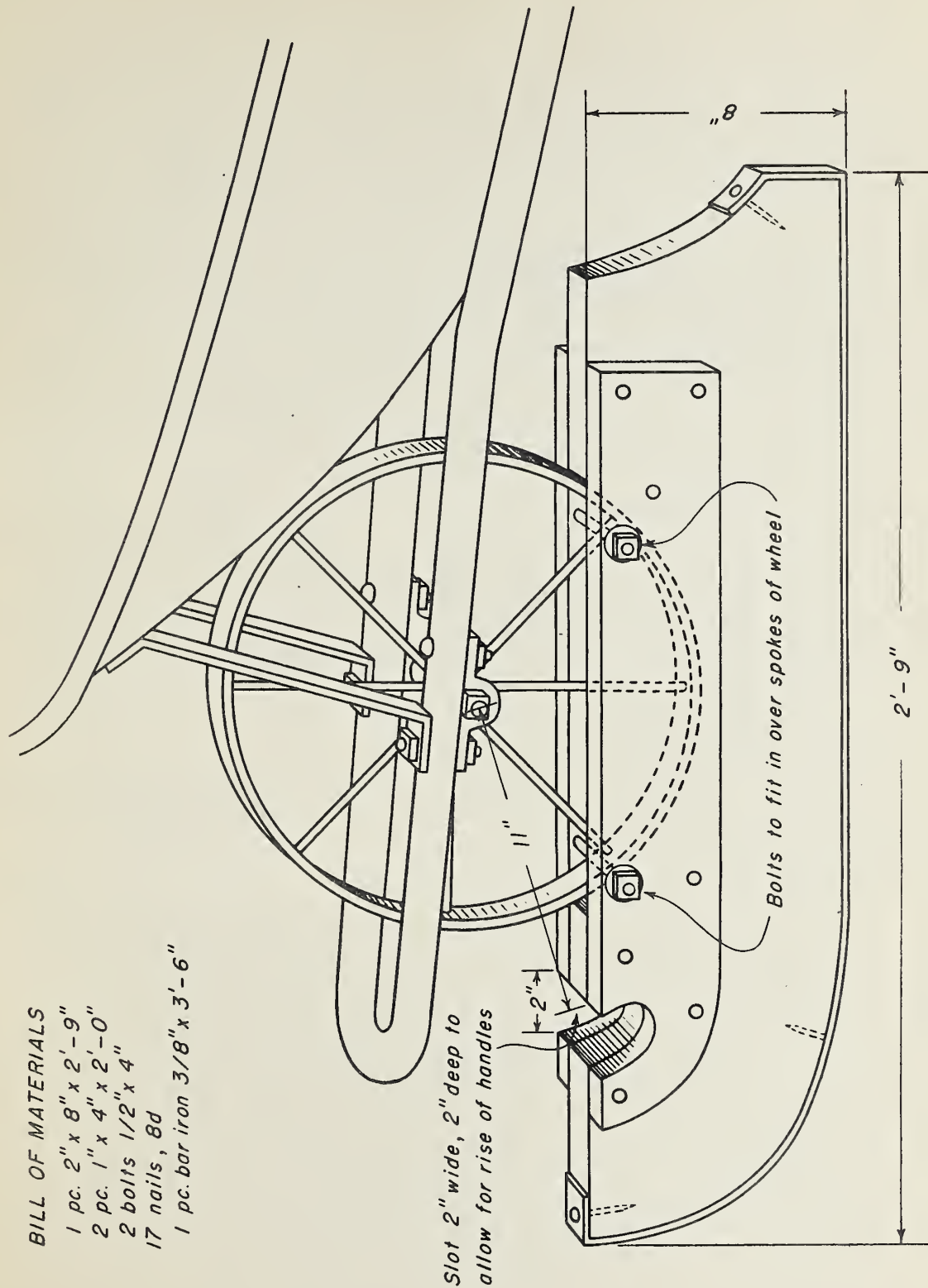
When not in use it is absolutely out of the way.

Submitted by
Chester E. Thompson, Jr. Civil Eng.
ECW Camp 93-S,
Bluffton, Ind.

DRAFTING TABLE COVER

BILL OF MATERIALS

- 1 pc. 2" x 8" x 2'-9"
- 2 pc. 1" x 4" x 2'-0"
- 2 bolts 1/2" x 4"
- 17 nails, 8d
- 1 pc. bar iron 3/8" x 3'-6"



SNOW RUNNER FOR WHEELBARROW

